

REMARKS/ARGUMENTS

Status of Claims / Summary of Rejections

Claims 1-6 and 8-29, and 33 are now pending. Claims 30-32, which are drawn to a turbocharged engine system, have been canceled without prejudice. Claim 7 has also been canceled.

Claims 17-29 are allowed, and apparatus Claims 3-5 and 8-9 are deemed to be patentable in subject matter, although objected to because they depend from claims that have been rejected.

Claims 1, 6-7, and 10-14 were rejected as being unpatentable over U.S. Patent No. 6,606,864 to MacKay. Claims 1 and 15-16 were rejected as unpatentable over U.S. Patent Application Publication 2004/0035117 to Rosen in view of MacKay. Claim 2 was rejected as unpatentable over MacKay in view of U.S. Patent No. 5,799,484 to Nims.

The Office Action asserts that the twin-spool system shown in Figure 5 of MacKay corresponds to what is claimed in Claim 1, except that neither of the generators is an auxiliary generator/motor. However, in Figure 18, MacKay shows a twin-spool system having a motor/generator coupled to one of the spools. The Office Action asserts it would have been obvious to replace one of the generators in Figure 5 with the motor/generator of Figure 18, thus meeting all of the elements of Claim 1.

With respect to Rosen, the Office Action notes that it discloses twin-spool systems wherein each spool is coupled to a generator, similar to Figure 5 of MacKay. Based on reasoning similar to the above, the Office Action asserts it would have been obvious to modify Rosen to replace one of the generators with a motor/generator as taught by MacKay.

Response to Rejections

The Applicants would first like to thank the Examiner for the careful and thorough examination, and for the allowance of Claims 17-29 and the indication of allowable subject

matter in Claims 3-5 and 8-9. Claim 8 has been amended to be in independent form, including all of the limitations of the claims from which it depended. Accordingly, Claim 8 should be in condition for allowance. Claim 9 has been amended to provide antecedent basis for the heat exchanger inadvertently omitted in the original claim. Since it depends from Claim 8, Claim 9 should also be in condition for allowance.

Applicants have also amended Claim 1 to recite that when the system is in load-serving operation, the auxiliary generator/motor is selectively operable in a generation mode or a motor mode, and to recite that in the motor mode, the auxiliary generator/motor receives electrical power from the main generator.

Claim 1 is submitted to be patentable over the cited references. MacKay in Figure 5 discloses a twin-spool turbogenerator system in which each spool drives a generator. In Figures 17 and 18, MacKay disclose a single-spool system in which the spool drives a generator that also happens to be used during start-up as a motor. As the Examiner doubtless is aware, any generator can be operated as a motor, and MacKay takes advantage of this to allow the single-spool system to be started. However, once the system is running and is supplying power to the load, the motor/generator is operated only as a normal generator.

Thus, even if the proposed modification of MacKay's twin-spool system were made and the motor/generator of Figures 17 and 18 were substituted for one of the generators of Figure 5, the system still would not meet the claimed invention of Claim 1. As noted, Claim 1 requires that when the system is in load-serving operation (i.e., after start-up and when the engine is running at rated speed and the generators are supplying the load), the auxiliary generator/motor can be selectively operated in the motor mode, and the main generator supplies the electrical power to the auxiliary generator/motor in this mode. In MacKay's twin-spool system, even if modified as proposed in the Office Action, during load-serving operation the motor/generator would operate in the generator mode only (see col. 13, lines 23-27: "The motor/generator 82 acts as a motor to start the gas turbine 80 during the starting process and then acts as a generator to produce electricity while the generator set is running."). MacKay thus clearly does not teach

or suggest the invention of Claim 1.

Likewise, Rosen does not suggest the invention of Claim 1. Rosen merely discloses a twin-spool turbogenerator generally similar to Figure 5 of MacKay, with no suggestion of an auxiliary generator/motor as in Claim 1.

Nims discloses a twin-spool turbogenerator system that is controlled to operate in either single-spool mode or twin-spool mode. Nothing in Nims remotely suggests an auxiliary generator/motor selectively operable in different modes of operation as in the invention of Claim 1. Furthermore, in the twin-spool turbogenerator system of Nims, both spools operate in parallel and share a combustor. This arrangement (Fig. 2A) is such that the pressure at the recuperator exit for each spool must always be equal to prevent reverse flow of heated gases into the compressor with the lower discharge pressure. This is in sharp distinction with variable-speed (and therefore variable-pressure) operation of the spool having the auxiliary generator/motor as in the invention of Claim 1.

Therefore, in light of the foregoing, Applicants respectfully submit that amended Claim 1 is patentable over the cited references.

Applicants have added new Claim 33, directed to a system that includes a controller operable to select the mode in which the auxiliary generator/motor operates and to control the auxiliary generator/motor in the selected mode so as to affect an operating condition of the gas turbine engine. It is submitted that the cited references do not teach or suggest such a system.

Finally, Claim 3 was objected to because the Examiner believes it should recite a "power electronic unit". However, the intended terminology, which is used throughout the specification, is "power electronics unit". Accordingly, Applicants do not believe Claim 3 should be amended in this regard.

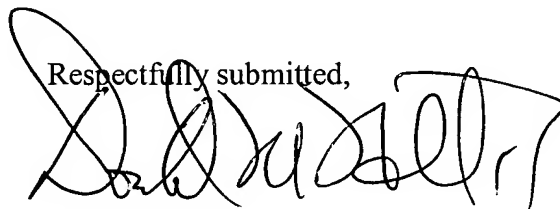
Appl. No.: 10/661,849
Amdt. dated 02/23/2005
Reply to Office action of November 26, 2004

Conclusion

Based on the above amendments and remarks, it is submitted that the application is in condition for allowance. The Examiner is invited to telephone the undersigned if there are any remaining issues requiring resolution before a Notice of Allowance can be issued.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefor (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

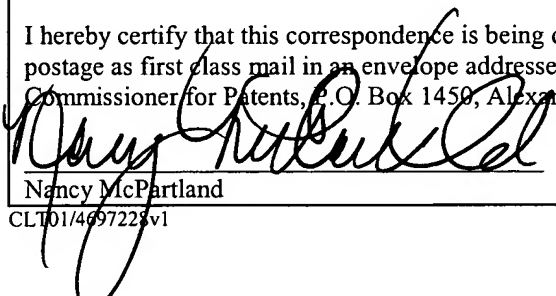


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